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EXAMINER

ALI, SYED J

ART UNIT

PAPER NUMBER

2127

DATE MAILED: 03/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/634,213

Applicant(s)

STONE ET AL.

Examiner

Syed J Ali

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to Amendment B, paper number 6, which was filed January 20, 2004. Claims 1-41 are presented for examination.
2. The cross reference related to the application cited in the specification must be updated (i.e. updated the relevant status, with PTO serial numbers or patent numbers where appropriate, on page 1, lines 5-6. The entire specification should be so revised).
3. The text of those sections of Title 35, U.S. code not included in this office action can be found in a prior office action.

Claim Rejections - 35 USC § 103

4. Claims 1-11, 14-18, and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gulick (USPN 6,502,123) in view of Gibbs et al. (USPN 6,169,725) (hereinafter Gibbs).

As per claim 1, Gulick teaches the invention as claimed, including a method of interfacing to a user of an isochronous device, comprising:

representing a currently used portion of an isochronous processing capacity of a device (col. 8 lines 46-67, "Tasks A-D uses 17 percent of the available operating system bandwidth [Task A uses 8%, Task B uses 3%, Task C uses 2% and Task D uses 4%]", wherein the bandwidth allocated to the tasks is relayed to a user), said user using said representation to interactively perform an analysis procedure of available system resources required to support an

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additional isochronous process (col. 8 lines 46-67, "Prior to initiating an application, the operating system may determine whether sufficient resources are available to execute the application", wherein the operating system carries out the analysis procedure which is invoked in response to a user attempting to initiate an application).

Gibbs teaches the invention as claimed, including the following limitations not shown by Gulick, specifically displaying the representation, wherein the user views the representation and thus controls the isochronous device (col. 8 lines 11-31, "This enables a control device [the FAV node] to present a general control user interface for all devices in the home network, irrespective of the differences in type and vendor").

It would have been obvious to one of ordinary skill in the art to combine Gulick with Gibbs since the analysis procedure is automatically initiated by the operating system in response to the scheduling of a new task. Thus, there is no mechanism in place for the user to trigger control of the analysis procedure. The user interface disclosed by Gulick is used primarily to make a determination of how to handle an inability to schedule an application, rather than allowing a user to make a primary determination as to whether a task can be initiated. Gibbs provides a user interface that enables control of singular devices, as well as control over an entire system. By using a similar user interface as disclosed by Gibbs within Gulick, control can be given to the user to initiate the operating system check for determining if there is sufficient processing capacity for an additional isochronous task.

As per claim 2, Gibbs teaches the invention as claimed, including the method of claim 1, wherein the device is selected from an isochronous bus, an IEEE-1394 bus, a programmable

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computer performing isochronous processing, an isochronous data encoder, an isochronous data decoder, an isochronous data transcoder, a source of isochronous data, a sink of isochronous data, an audio/video hard disk drive [AVHDD], an isochronous data storage and retrieval device, and a device capable of concurrently performing at least one isochronous task (col. 9 lines 49056, “1394 Communication Media Manager 501 - allows other elements to perform asynchronous and isochronous communication over 1394”, wherein the claimed devices are a set of typical isochronous devices, and since Gibbs discloses an architecture that can support any type of isochronous device, Gibbs would support any of the claimed devices).

As per claim 3, Gulick teaches the invention as claimed, including the method of claim 1, further comprising:

receiving a user request to initiate a task, wherein the displaying is initiated when honoring the user request would exceed the isochronous processing capacity (col. 7 lines 17-29, “when an application is attempted to be initiated and insufficient resources are available, scheduler 218 may query a user via a user interface 220 for action to take”).

As per claim 4, Gulick teaches the invention as claimed, including the method of claim 3, further comprising:

accepting a user selection of at least one of a plurality of isochronous tasks currently active on the device (col. 7 lines 17-29, “a user via user interface 220 may increase the percentage of the operating system bandwidth allocated to isochronous tasks. Alternatively, a

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user may select to disable an application currently executing to free resources for the execution of the new application”); and

sacrificing the selected task (col. 7 lines 17-29, “a user may select to disable an application currently executing to free resources for the execution of the new application”).

As per claim 5, Gulick teaches the invention as claimed, including the method of claim 4, wherein the sacrificing is selected from terminating the selected task, suspending the selected task and performing the selected task in a degraded mode of operation (col. 2 lines 52-65, “if sufficient resources are not available to execute the isochronous tasks of an application, the operating system uses the system interface to query a user whether to suspend an existing application, to increase the percentage of operating system bandwidth allocated to isochronous tasks, or to not initiate the new application”).

As per claim 6, Gulick teaches the invention as claimed, including the method of claim 1, wherein the representation shows a relationship between the currently used portion and the isochronous processing capacity (col. 8 line 46 - col. 9 line 14, “operating system 112 may determine that the execution of Task E in addition to Tasks A-D would consume 21% of the available operating system bandwidth. If the maximum percentage allocated to isochronous task is 20%, operating system 212 may not initiate the application that includes Task E”, wherein the available processing capacity is related to the allocated portion).

Furthermore, Gibbs teaches the invention as claimed, including graphically showing the representation (col. 8 lines 11-31, “This enables a control device [the FAV node] to present a

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general control user interface for all devices in the home network, irrespective of the differences in type and vendor”, wherein the combination of Gulick and Gibbs allows the incorporation of internal features with a graphical user interface).

As per claim 7, Gulick teaches the invention as claimed, including the method of claim 1, wherein the representation shows how the currently used portion is allocated among a plurality of isochronous tasks currently active on the device (col. 8 lines 46-67, “Tasks A-D uses 17 percent of the available operating system bandwidth [Task A uses 8%, Task B uses 3%, Task C uses 2% and Task D uses 4%]”).

As per claim 8, Gulick teaches the invention as claimed, including a method of interfacing to a user of an isochronous device, comprising:

receiving a user request to initiate a task (col. 7 lines 17-29, “when an application is attempted to be initiated and insufficient resources are available, scheduler 218 may query a user via a user interface 220 for action to take”);

representing the isochronous processing capacity of a device, said user using said representation to interactively perform an analysis procedure of available system resources required to support said task, the displaying being initiated when honoring the user request would exceed the isochronous processing capacity (col. 8 lines 46-67, “Prior to initiating an application, the operating system may determine whether sufficient resources are available to execute the application”, wherein the operating system carries out the analysis procedure which

is invoked in response to a user attempting to initiate an application and prompts the user for action when the initiated task goes over the allocated bandwidth); and

accepting a user selection of a currently active isochronous task that is to be sacrificed in favor of the requested task (col. 7 lines 17-29, "a user may select to disable an application currently executing to free resources for the execution of the new application").

Gibbs teaches the invention as claimed, including the following limitations not shown by Gulick, specifically displaying the representation, wherein the user views the representation and thus controls the isochronous device (col. 8 lines 11-31, "This enables a control device [the FAV node] to present a general control user interface for all devices in the home network, irrespective of the differences in type and vendor").

As per claim 9, Gibbs teaches the invention as claimed, including the method of claim 8, wherein the device is selected from an isochronous bus, an IEEE-1394 bus, a programmable computer performing isochronous processing, an isochronous data encoder, an isochronous data decoder, an isochronous data transcoder, a source of isochronous data, a sink of isochronous data, an audio/video hard disk drive [AVHDD], a isochronous data storage and retrieval device, and a device capable of concurrently performing more than one isochronous task (col. 9 lines 49056, "1394 Communication Media Manager 501 - allows other elements to perform asynchronous and isochronous communication over 1394").

As per claim 10, Gulick teaches the invention as claimed, including the method of claim 8 wherein the representation comprises a representation of a projected state of the isochronous

processing capacity if the requested task were initiated (col. 8 lines 46-67, “if an application that includes one isochronous task [Task E] that executes every twenty milliseconds and has a duration of 0.8 milliseconds would require 4% of the operating system budget. If this application was attempted to be initiated, operating system 112 may determine that the execution of Task E in addition to Tasks A-D would consume 21% of the available operating system bandwidth”).

As per claim 11, Gulick teaches the invention as claimed, including the method of claim 8 wherein the sacrificing is selected from terminating the selected task, suspending the selected task and converting the selected task to an asynchronous mode of operation (col. 2 lines 52-65, “if sufficient resources are not available to execute the isochronous tasks of an application, the operating system uses the system interface to query a user whether to suspend an existing application, to increase the percentage of operating system bandwidth allocated to isochronous tasks, or to not initiate the new application”). In addition, Gibbs discloses an interface that allows a device to perform either asynchronous or isochronous communication (col. 9 lines 54-56, “1394 Communication Media Manager 501 - allows other elements to perform asynchronous and isochronous communication over 1394”).

As per claim 14, Gulick teaches the invention as claimed, including a system for effectively managing resources in an electronic device, comprising:

a resource characterization coupled to said electronic device, said resource characterization corresponding to a requested process (col. 8 lines 46-67, “if an application that

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includes one isochronous task [Task E] that executes every twenty milliseconds and has a duration of 0.8 milliseconds would require 4% of the operating system budget. If this application was attempted to be initiated, operating system 112 may determine that the execution of Task E in addition to Tasks A-D would consume 21% of the available operating system bandwidth”, wherein the operating system is aware of the resource consumption of each device); and

a system user using said user interface to interactively perform an analysis procedure of available system resources required to support said requested process (col. 8 lines 46-67, “Prior to initiating an application, the operating system may determine whether sufficient resources are available to execute the application”, wherein the operating system carries out the analysis procedure which is invoked in response to a user attempting to initiate an application and prompts the user for action when the initiated task goes over the allocated bandwidth).

Gibbs teaches the invention as claimed, including displaying the representation, wherein the user views the representation and thus controls the isochronous device (col. 8 lines 11-31, “This enables a control device [the FAV node] to present a general control user interface for all devices in the home network, irrespective of the differences in type and vendor”);

an interface manager configured to provide a user interface that includes resource information from said resource characterization (col. 4 lines 27-43, “They provide the infrastructure to control the routing and processing of isochronous and time-sensitive data [e.g., such as audio and video content]. Specifically, the HAVI architecture provides: an execution environment supporting the visual representation and control of appliances”, wherein the

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interface does not specifically address resource utilization, and this is addressed above by Gulick); and

means for controlling said interface manager (col. 4 lines 27-43, “the HAVI architecture provides: an execution environment supporting the visual representation and control of appliances”, wherein the interface allows a user to interactively control the functions of a connected isochronous device).

As per claim 15, Gibbs teaches the invention as claimed, including the system of claim 14, wherein said electronic device is coupled to an electronic network that is implemented according to an IEEE Std 1394 serial bus standard (col. 9 lines 54-56, “1394 Communication Media Manager 501 - allows other elements to perform asynchronous and isochronous communication over 1394”).

As per claim 16, Gibbs teaches the invention as claimed, including the system of claim 14 wherein said electronic device is one of a consumer-electronics device, an audio-visual device, a set-top box, and a personal computer device (col. 9 lines 49-56, “1394 Communication Media Manager 501 - allows other elements to perform asynchronous and isochronous communication over 1394”, wherein the claimed devices are a set of typical isochronous devices, and since Gibbs discloses an architecture that can support any type of isochronous device, Gibbs would support any of the claimed devices).

As per claim 17, Gibbs teaches the invention as claimed, including the system of claim 14 wherein said requested process includes one or more time-sensitive isochronous processes for manipulating time-critical isochronous data, and wherein said means for controlling includes at least one of a processor device and dedicated logic (col. 4 lines 27-43, “They provide the infrastructure to control the routing and processing of isochronous and time-sensitive data [e.g., such as audio and video content]”).

As per claim 18, Gulick teaches the invention as claimed, including the system of claim 14 wherein said interface manager displays projected resource usages for said requested process in combination with allocated resources for existing processes (col. 8 lines 46-67, “if an application that includes one isochronous task [Task E] that executes every twenty milliseconds and has a duration of 0.8 milliseconds would require 4% of the operating system budget. If this application was attempted to be initiated, operating system 112 may determine that the execution of Task E in addition to Tasks A-D would consume 21% of the available operating system bandwidth”) to thereby allow said system user to interactively manage said resources in said electronic device by selecting one of a request cancellation, an existing task cancellation (col. 2 lines 52-65, “if sufficient resources are not available to execute the isochronous tasks of an application, the operating system uses the system interface to query a user whether to suspend an existing application, to increase the percentage of operating system bandwidth allocated to isochronous tasks, or to not initiate the new application”) and a resource analysis procedure that is performed by referencing an expanded user interface (col. 8 lines 46-67, wherein the attempted

initiation of a new task results in the operating system analyzing resources to determine if the allocated bandwidth has been exceeded).

As per claim 27, Gulick teaches the invention as claimed, including the system of claim 14 wherein said interface manager displays current existing resource usages in a normal operational mode on said user interface (col. 8 lines 46-67, wherein the resource usages described therein are available in normal operational modes, and when taken in combination with the visual representation disclosed by Gibbs, would be available for display even under normal operating conditions).

As per claim 28, Gulick teaches the invention as claimed, including the system of claim 27 wherein said user interface includes a current resource indicator that provides information regarding current existing resource usages on said electronic device (col. 8 lines 46-67, wherein the current resource indicators are used in evaluating the bandwidth usage).

5. Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gulick in view of Gibbs in view of McCartney (USPN 6,496,864).

As per claim 12, Gulick teaches the invention as claimed, including a method of indicating to a user a current usage of an isochronous device, comprising:

representing a particular one of a plurality of tasks being handled by the device, said user using said representation to interactively perform an analysis procedure of available system

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resources required to support an additional isochronous process, the representation being of a portion of the isochronous capacity used by the particular task (col. 8 lines 46-67, "Prior to initiating an application, the operating system may determine whether sufficient resources are available to execute the application", wherein the operating system carries out the analysis procedure which is invoked in response to a user attempting to initiate an application and prompts the user for action when the initiated task goes over the allocated bandwidth).

Gibbs teaches the invention as claimed, including the following limitations not shown by Gulick, specifically displaying the representation, wherein the user views the representation and thus controls the isochronous device (col. 8 lines 11-31, "This enables a control device [the FAV node] to present a general control user interface for all devices in the home network, irrespective of the differences in type and vendor").

McCartney teaches the invention as claimed, including the following limitations not shown by Gulick or Gibbs, specifically displaying, when the representation is selected, a breakdown of a plurality of types of resources used by the particular task (col. 3 lines 36-64, "When a hardware device is shared among a plurality of processes, it may be necessary to allocate certain resources for use specifically by a particular process. For example, when a display device is shared among a plurality of processes, each process may require allocation of some video memory of the display device").

It would have been obvious to one of ordinary skill in the art to combine Gulick and Gibbs for reasons discussed above in reference to claim 1. Further, it would have been obvious to one of ordinary skill in the art to add McCartney to the combination of Gulick and Gibbs since by allowing the user to view how a particular device is consuming various resources, reallocation

can be performed such that if one particular resource utilization is abnormally high, it can be adjusted accordingly. In continuing with the example of a display device presented by McCartney, if the display device is consuming a high portion of the video memory, and a second display device is also attempting to use video memory, it may be desirable to instruct the first device to use fewer resources. Thus greater flexibility is provided in freeing used resources for initiation of a new application or task.

As per claim 13, Gibbs teaches the invention as claimed, including the method of claim 12, wherein the device is selected from an isochronous bus, an IEEE-1394 bus, a programmable computer performing isochronous processing, an isochronous data encoder, an isochronous data decoder, an isochronous data transcoder, a source of isochronous data, a sink of isochronous data, an audio/video hard disk drive [AVHDD], a isochronous data storage and retrieval device, and a device capable of concurrently performing at least one isochronous task (col. 9 lines 49056, "1394 Communication Media Manager 501 - allows other elements to perform asynchronous and isochronous communication over 1394").

6. Claims 19-26 and 29-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gulick in view of Gibbs in view of Clarisse et al. (USPN 6,591,290) (hereinafter Clarisse).

As per claim 19, Clarisse teaches the invention as claimed, including the following limitations not shown by Gulick or Gibbs, specifically the system of claim 14 wherein a system user generates a request to instantiate said requested process on said electronic device (Claim 1,

“responsive to a user activating an application process on a one of said user application devices...for transmitting control data to a selected one of said plurality of servers indicating a request for initiation of said activated application”).

It would have been obvious to one of ordinary skill in the art to add Clarisse to the combination of Gulick and Gibbs since the modified Gulick has the drawback of not allowing user initiated tasks. All tasks are initiated at the system level, and provide the user with the ability to intervene if problems occur. Nonetheless, allowing a user to initiate a task is not a particularly unknown concept. Clarisse discloses one example of allowing a user to initiate tasks above. When taken in combination with the modified Gulick, a user is provided the ability to directly control isochronous devices, thereby allowing a user to have those devices function in whichever manner they may desire.

As per claim 20, Gulick teaches the invention as claimed, including the system of claim 19 wherein an allocation manager evaluates said resource characterization in response to said request from said software module (col. 7 lines 4-16, “prior to initiating an application, scheduler 218 determines whether sufficient resources are available to execute the tasks of that application”, wherein the scheduler acts as the allocation manager in the sense that it evaluates whether or not the system can satisfy the request).

As per claim 21, Gulick teaches the invention as claimed, including the system of claim 20 wherein said resource characterization includes one or more resource listings and one or more corresponding resource usage values that are required for a deterministic performance of said

requested process (col. 8 lines 46--67, "in the illustrated embodiment, Tasks A-D uses 17 percent of the available operating system bandwidth [Task A uses 8%, Task B uses 3%, Task C uses 2% and Task D uses 4%]", wherein the resource usage values of the tasks is taken as a composite when considering whether or not the system can satisfy any new requests).

As per claim 22, Gulick teaches the invention as claimed, including the system of claim 20 wherein said resource characterization includes resource information regarding total available resources from said electronic device (col. 8 lines 46-67, "If the maximum percentage allocated to isochronous tasks is 20%, operating system 212 may not initiate the application that includes Task E", wherein the resource characterization considers the total bandwidth allocated to a particular type of task when making a scheduling decision).

As per claim 23, Gulick teaches the invention as claimed, including the system of claim 20 wherein said allocation manager compares resource usage values from said resource characterization and current available resource values from said electronic device to determine whether to authorize said requested process (col. 8 lines 46-67, "if an application that includes one isochronous task [Task E] that executes every twenty milliseconds and has a duration of 0.8 milliseconds would require 4% of the operating system budget. If this application was attempted to be initiated, operating system 112 may determine that the execution of Task E in addition to Tasks A-D would consume 21% of the available operating system bandwidth", wherein the cumulative bandwidth consumed is compared with the allocated bandwidth in making a scheduling decision).

As per claim 24, Gulick teaches the invention as claimed, including the system of claim 23 wherein said allocation manager authorizes said requested process whenever said resource usage values from said resource characterization are less than or equal to said current available resource values from said electronic device (col. 8 lines 46-67, “if an application that includes one isochronous task [Task E] that executes every twenty milliseconds and has a duration of 0.8 milliseconds would require 4% of the operating system budget. If this application was attempted to be initiated, operating system 112 may determine that the execution of Task E in addition to Tasks A-D would consume 21% of the available operating system bandwidth. If the maximum percentage allocated to isochronous tasks is 20%, operating system 212 may not initiate the application that includes Task E”, wherein if the total bandwidth consumed is less than the maximum percentage allocated, the application can be scheduled).

As per claim 25, Gulick teaches the invention as claimed, including the system of claim 23 wherein said allocation manager denies said requested process whenever said resource usage values from said resource characterization are greater than said current available resource values from said electronic device (col. 8 lines 46-67, “if an application that includes one isochronous task [Task E] that executes every twenty milliseconds and has a duration of 0.8 milliseconds would require 4% of the operating system budget. If this application was attempted to be initiated, operating system 112 may determine that the execution of Task E in addition to Tasks A-D would consume 21% of the available operating system bandwidth. If the maximum

percentage allocated to isochronous tasks is 20%, operating system 212 may not initiate the application that includes Task E”).

As per claim 26, Gulick teaches the invention as claimed, including the system of claim 24 wherein a picokernel in said electronic device instantiates and executes said requested process after said allocation manager authorizes said requested process (col. 7 lines 4-16, wherein the scheduler schedules the process once a determination has been made that the request can be satisfied using the available resources). Furthermore, Applicant discloses on pg. 12 that *“picokernel 314 preferably controls and coordinates the scheduling of isochronous processes.”* In light of this disclosure, the scheduler of Gulick performs the same functions as the claimed picokernel.

As per claim 29, Clarisse teaches the invention as claimed, including the system of claim 14 wherein a system user generates a request to instantiate a new task on said electronic device (Claim 1, “responsive to a user activating an application process on a one of said user application devices...for transmitting control data to a selected one of said plurality of servers indicating a request for initiation of said activated application”).

Gulick discloses the system of claim 14 wherein a network entity generates a request to instantiate a new task on said electronic device (col. 7 lines 17-29, “It is noted that the user may be another application or another computer system”, wherein the other computer system could reasonably be a network entity).

As per claim 30, Gulick teaches the invention as claimed, including the system of claim 29 wherein said interface manager displays current existing resource usages and projected resource usages on said user interface in a request mode, said projected resource usages including additional resources required for said new task (col. 8 lines 46-67, “if an application that includes one isochronous task [Task E] that executes every twenty milliseconds and has a duration of 0.8 milliseconds would require 4% of the operating system budget. If this application was attempted to be initiated, operating system 112 may determine that the execution of Task E in addition to Tasks A-D would consume 21% of the available operating system bandwidth”).

As per claim 31, Gulick teaches the invention as claimed, including the system of claim 30 wherein said user interface includes a projected resource indicator that provides information regarding projected resource usages that include additional resources required for said new task (col. 8 lines 46-67, “if an application that includes one isochronous task [Task E] that executes every twenty milliseconds and has a duration of 0.8 milliseconds would require 4% of the operating system budget. If this application was attempted to be initiated, operating system 112 may determine that the execution of Task E in addition to Tasks A-D would consume 21% of the available operating system bandwidth”).

As per claim 32, Gulick teaches the invention as claimed, including the system of claim 30 wherein said user interface includes a request result field that provides information regarding whether sufficient additional resources are available to instantiate said new task (col. 8 lines 46-

67, “if an application that includes one isochronous task [Task E] that executes every twenty milliseconds and has a duration of 0.8 milliseconds would require 4% of the operating system budget. If this application was attempted to be initiated, operating system 112 may determine that the execution of Task E in addition to Tasks A-D would consume 21% of the available operating system bandwidth. If the maximum percentage allocated to isochronous tasks is 20%, operating system 212 may not initiate the application that includes Task E”, wherein if the total bandwidth consumed is less than the maximum percentage allocated, the application can be scheduled).

As per claim 33, Gulick teaches the invention as claimed, including the system of claim 30 wherein an allocation manager allocates resources to instantiate said new task when sufficient additional resources are available (col. 8 lines 46-67, “if an application that includes one isochronous task [Task E} that executes every twenty milliseconds and has a duration of 0.8 milliseconds would require 4% of the operating system budget. If this application was attempted to be initiated, operating system 112 may determine that the execution of Task E in addition to Tasks A-D would consume 21% of the available operating system bandwidth. If the maximum percentage allocated to isochronous tasks is 20%, operating system 212 may not initiate the application that includes Task E”, wherein if the total bandwidth consumed is less than the maximum percentage allocated, the application can be scheduled).

As per claim 34, Gulick teaches the invention as claimed, including the system of claim 30 wherein said system user cancels said request whenever said user interface indicates that

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sufficient additional resources are not available (col. 2 lines 52-65, “if sufficient resources are not available to execute the isochronous tasks of an application, the operating system uses the system interface to query a user whether to suspend an existing application, to increase the percentage of operating system bandwidth allocated to isochronous tasks, or to not initiate the new application”).

As per claim 35, Gulick teaches the invention as claimed, including the system of claim 30 wherein said system user cancels an existing task whenever said user interface indicates that sufficient additional resources are not available (col. 2 lines 52-65, “if sufficient resources are not available to execute the isochronous tasks of an application, the operating system uses the system interface to query a user whether to suspend an existing application, to increase the percentage of operating system bandwidth allocated to isochronous tasks, or to not initiate the new application”).

As per claim 36, Gulick teaches the invention as claimed, including the system of claim 30 wherein said system user selects an expanded user interface whenever said user interface indicates that sufficient additional resources are not available (col. 8 lines 30-67, wherein the user is prompted in response to a condition that occurs when a task request does not have sufficient resources available to service the request). Furthermore, the user interface disclosed by Gulick could be considered an expanded user interface in the sense that the user is prompted in an effort to resolve the problem of not having sufficient resources to service the task.

As per claim 37, Gibbs as modified by Gulick discloses the system of claim 36 wherein Gulick discloses said expanded user interface comprises a task summary display that includes existing-task resource usage details and projected-task resource usage details (col. 8 lines 30-67, wherein the current resource utilization is available for currently executing tasks, as well as the projected resource utilization should the present task be serviced).

As per claim 38, Gulick teaches the invention as claimed, including the system of claim 36 wherein said expanded user interface comprises a task details display that includes individual resource details for one or more selected tasks (col. 8 lines 30-67, wherein the utilization is shown for Tasks A-D individually as well as what the projected utilization would be for Task E).

As per claim 39, Gulick teaches the invention as claimed, including the system of claim 36 wherein said system user performs a resource analysis procedure using said expanded user interface, and responsively cancels one or more existing tasks based on said resource analysis procedure (col. 8 lines 46-67, wherein the attempted initiation of a new task results in the operating system analyzing resources to determine if the allocated bandwidth has been exceeded, and the user is allowed to cancel tasks if the result of the analysis indicates that insufficient resources are available).

7. Claims 40-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gibbs in view of Gulick.

As per claim 40, Gibbs teaches the invention as claimed, including a computer-readable medium comprising program instructions for managing resources in an electronic device by performing the steps of:

an interface manager (col. 4 lines 27-43, “They provide the infrastructure to control the routing and processing of isochronous and time-sensitive data [e.g., such as audio and video content]. Specifically, the HAVI architecture provides: an execution environment supporting the visual representation and control of appliances”, wherein the interface does not specifically address resource utilization, and this is addressed below by Gulick);

generating a user interface with said interface manager based upon said resource characterization (col. 4 lines 27-43, “They provide the infrastructure to control the routing and processing of isochronous and time-sensitive data [e.g., such as audio and video content]. Specifically, the HAVI architecture provides: an execution environment supporting the visual representation and control of appliances”, wherein the interface does not specifically address resource utilization, and this is addressed below by Gulick); and

controlling said interface manager with a processor that is coupled to said electronic device (col. 4 lines 27-43, “the HAVI architecture provides: an execution environment supporting the visual representation and control of appliances”, wherein the interface allows a user to interactively control the functions of a connected isochronous device).

Gulick teaches the invention as claimed, including the following limitations not shown by Gibbs, specifically referencing a resource characterization, said resource characterization corresponding to a requested process (col. 8 lines 46-67, “if an application that includes one isochronous task (Task E) that executes every twenty milliseconds and has a duration of 0.8

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milliseconds would require 4% of the operating system budget. If this application was attempted to be initiated, operating system 112 may determine that the execution of Task E in addition to Tasks A-D would consume 21% of the available operating system bandwidth”, wherein the operating system is aware of the resource consumption of each device).

It would have been obvious to one of ordinary skill in the art to combine Gibbs with Gulick since the analysis procedure is automatically initiated by the operating system in response to the scheduling of a new task. Thus, there is no mechanism in place for the user to trigger control of the analysis procedure. The user interface disclosed by Gulick is used primarily to make a determination of how to handle an inability to schedule an application, rather than allowing a user to make a primary determination as to whether a task can be initiated. Gibbs provides a user interface that enables control of singular devices, as well as control over an entire system. By using a similar user interface as disclosed by Gibbs within Gulick, control can be given to the user to initiate the operating system check for determining if there is sufficient processing capacity for an additional isochronous task.

As per claim 41, Gibbs teaches the invention as claimed, including a system for managing resources in an electronic device, comprising:

means for generating a user interface based upon a resource characterization (col. 4 lines 27-43, “They provide the infrastructure to control the routing and processing of isochronous and time-sensitive data [e.g., such as audio and video content]. Specifically, the HAVI architecture provides: an execution environment supporting the visual representation and control of

appliances”, wherein the interface does not specifically address resource utilization, and this is addressed below by Gulick); and

means for controlling said means for generating a user interface (col. 4 lines 27-43, “the HAVI architecture provides: an execution environment supporting the visual representation and control of appliances”, wherein the interface allows a user to interactively control the functions of a connected isochronous device).

Gulick teaches the invention as claimed, including the following limitations not shown by Gibbs, specifically means for maintaining a resource characterization, said resource characterization corresponding to a requested process (col. 8 lines 46-67, “if an application that includes one isochronous task (Task E) that executes every twenty milliseconds and has a duration of 0.8 milliseconds would require 4% of the operating system budget. If this application was attempted to be initiated, operating system 112 may determine that the execution of Task E in addition to Tasks A-D would consume 21% of the available operating system bandwidth”, wherein the operating system is aware of the resource consumption of each device).

Response to Arguments

8. Applicant's arguments with respect to claims 1-2, 6-7, and 12-13 have been considered but are moot in view of the new grounds of rejection.

9. Applicant argues on page 13, “*Gulick only discloses that a ‘scheduler 218 may query a user via a user interface 220 for action to take’ when insufficient resources are available. Applicants respectfully submit that the simple query disclosed by Gulick is far less than the*

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substantial 'analysis procedure' performed by a system user of Applicants' claimed invention."

This argument is initially presented in regards to independent claim 8 and reiterated on page 18 in regards to claims 14 and 41.

While it is agreed that Applicants' assertion that the simple query disclosed by Gulick is dissimilar from the analysis procedure claimed, it is Examiner's position that Gulick also teaches the claimed analysis procedure. Specifically, when a new task is initiated, the operating system analyzes the currently available resources and makes a determination as to whether the operating system can support an additional task based on the allocated bandwidth. While it is noted that this analysis is started automatically by the operating system, a simple modification would allow a user to also initiate this action. The motivation for doing so is provided above in reference to claim 1 in combination with the teachings of Gibbs. Furthermore, since Gulick does prompt a user to suggest an appropriate action in response to an inability to support an additional process, it would have been obvious to one of ordinary skill in the art to not only prompt the user for an action, but also provide the user with the resource utilization so that the proper determination can be made.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

USPN 6,418,459 and USPN 6,421,702, both to Gulick, are similar to the Gulick reference provided above.

USPN 6,223,201, to Reznak, is related to managing tasks and providing tasks with a portion of the available resources.

USPN 5,640,595, to Baugher et al., is related to a graphical user interface for managing resource reservation.

Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Syed J Ali whose telephone number is (703) 305-8106. The examiner can normally be reached on Mon-Fri 8-5:30, 2nd Friday off.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai T An can be reached on (703) 305-9678. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Syed Ali
March 4, 2004



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